

IN THE CLAIMS:

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37. (New) An automatic transmission comprising:

an input shaft rotatably driven by a drive source;

a first planetary gear unit comprised of first, second, third, and fourth rotary components;

reduced speed rotation output means for outputting rotation at a reduced speed to said first rotary component;

a first clutch that connects and disconnects said input shaft and said second rotary component;

a second clutch that connects and disconnects said input shaft and said third rotary component;

an output member that outputs the rotation of said fourth rotary component to a drive wheel transmission mechanism;

wherein said reduced speed rotation output means and said first clutch are located on one axial side of said first planetary gear unit; and

wherein said second clutch is located on a second axial side of said first planetary gear unit, opposite said first axial side.

38. (New) An automatic transmission according to Claim 37, further comprising a transmitting member linking said reduced speed rotation output means to said first planetary gear unit; and

wherein said first clutch is located radially inward of said transmitting member.

39. (New) An automatic transmission according to Claim 37 wherein said reduced speed rotation output means is a speed reducing second planetary gear unit comprising an input rotary component for receiving input of rotation of said input shaft, a reduced speed rotary component that rotates at a speed reduced from the speed of rotation of the input rotary component, a fixed component, and a third clutch for controlling the connection, through said transmitting member, between said reduced speed rotary

component and said first rotary component;

wherein said reduced speed rotation is transmitted to said first rotary component by engagement of said third clutch.

40. (New) An automatic transmission according to Claim 39, wherein said first clutch is located radially inward of said third clutch.

41. (New) An automatic transmission according to Claim 40, wherein:

said third clutch comprises friction members and a drum unit and a hub unit that are linked upon engagement of said friction members, wherein:

said hub unit is linked to said reduced speed rotary component;

said drum unit forms a hydraulic servo with a piston sealed in an oil-tight manner, and is linked to said first rotary component; and

said first clutch is located radially inward of said drum unit.

42. (New) An automatic transmission according to Claim 41, wherein:

friction members of said third clutch are located radially outward of said second planetary gear unit;

and wherein a hydraulic servo of said third clutch is disposed adjoining said second planetary gear unit on said one axial side of said first planetary gear unit.

43. (New) An automatic transmission according to Claim 42, wherein a hydraulic servo of a first brake, for holding against rotation said first rotary component of said first planetary gear unit to which reduced speed rotation is input, is located radially outward of the hydraulic servo of said third clutch.

44. (New) An automatic transmission according to Claim 38 wherein said reduced speed rotation output means is a speed reducing second planetary gear unit comprising an input rotary element for receiving input of rotation of said input shaft, a reduced speed rotary element that rotates at a speed reduced from the speed of rotation of the input rotary element, a fixed element, and a third clutch for controlling the connection, through said transmitting member, between said reduced speed rotary element and said first rotary component;

wherein said reduced speed rotation is transmitted to said first rotary component by engagement of said third clutch.

45. (New) An automatic transmission according to Claim 39 wherein:

an engagement element of said second planetary gear unit is fixed to a first boss extending from one wall of a case;

a hydraulic servo of said third clutch is mounted on said first boss unit;

a hydraulic servo of said second clutch is mounted on a second boss that extends from another wall of said case;

said first clutch is located adjoining said first planetary gear unit and comprises

friction members, a hydraulic servo, a drum unit, and a hub unit integral with said hydraulic servo; and

said drum unit is linked to said input shaft.

46. (New) An automatic transmission according to Claim 37, wherein said reduced speed rotation output means is a speed reducing second planetary gear unit comprising an input rotary element for receiving input of rotation of said input shaft, a reduced speed rotary element that is linked to said first rotary component at all times and rotates at said reduced speed, a fixable element, a third clutch for selectively connecting said input shaft and said input rotary component, and a third brake for fixing said fixable element;

wherein said reduced rotation is transmitted to said first rotary component by engagement of said third clutch and said third brake.

47. (New) An automatic transmission according to Claim 45, further comprising:

a transmitting member linking said first and second planetary gear units; and

wherein said third clutch is disposed radially inward of said transmitting member.

48. (New) An automatic transmission according to Claim 47, wherein said first clutch and said third clutch are located axially adjacent and radially inward of said transmitting member.

49. (New) An automatic transmission according to Claim 48, wherein:

said third clutch comprises friction members, a drum unit, and a hydraulic servo;
wherein said hydraulic servo is located on the side of said friction members
axially opposite said second planetary gear unit; and

said drum unit serves as a cylinder of said hydraulic servo and is linked to said
input shaft.

50. (New) An automatic transmission according to Claim 49, wherein the hydraulic
servo of said third clutch is located adjoining the hydraulic servo of said first clutch,
between the hydraulic servo of said first clutch and the friction members of said third
clutch.

51. (New) An automatic transmission according to Claim 46, further comprising:

a transmitting member linking said reduced speed rotation output means and
said first planetary gear unit; and

wherein said third brake is located on the side of said second planetary gear unit
axially opposite said first planetary gear unit.

52. (New) An automatic transmission according to Claim 51, wherein said third brake
comprises a hydraulic servo including a cylinder formed in a case housing said
automatic transmission.

53. (New) An automatic transmission according to Claim 51 wherein:

said third clutch comprises friction members, a drum unit, and a hydraulic servo;

said hydraulic servo is located on the side of said friction members axially opposite said second planetary gear unit; and;

said drum unit serves as a cylinder of said hydraulic servo and is linked to said input shaft.

54. (New) An automatic transmission according to Claim 37, wherein said reduced speed rotation output means is a second planetary gear unit comprising an input rotary element for receiving input of rotation of said input shaft, a reduced speed rotary element that rotates at a speed reduced from the speed of rotation of the input rotary element and is connected to said first rotary component at all times, a fixable rotary element, and a third brake for fixing said fixable rotary element against rotation;

wherein said reduced speed rotation is transmitted to said first rotary component by engagement of said third brake.

55. (New) An automatic transmission according to Claim 54, wherein said third brake is located on the side of said second planetary gear unit axially opposite said first planetary gear unit;

and wherein the hydraulic servo of said third brake comprises a hydraulic servo including a cylinder formed in a case housing said automatic transmission.

56. (New) An automatic transmission according to Claim 37 providing six forward speeds and one reverse speed, and wherein in fourth forward speed said first clutch and said second clutch are engaged

57. (New) An automatic transmission according to Claim 56, wherein said first planetary gear unit is a multiple type planetary gear unit, comprising a first sun gear, a long pinion which meshes with said first sun gear, a short pinion which meshes with said long pinion, a carrier rotatably supporting said long pinion and said short pinion, a second sun gear meshing with said short pinion, and a ring gear meshing with said long pinion;

wherein said first rotary component is said first sun gear which is fixed by engagement of said first brake;

wherein said second rotary component is said second sun gear to which rotation of said input shaft is input by engagement of said first clutch;

wherein said third rotary component is said carrier which receives input of rotation of said input shaft by engagement of said second clutch, and which is fixed by engagement of said second brake; and

and wherein said fourth rotary component is said ring gear linked to said output member.

58. (New) An automatic transmission according to Claim 56, comprising a pair of said first planetary gear units each comprising a first sun gear, a second sun gear linked to

said first sun gear, a first carrier meshing with said first sun gear, a second carrier meshing with said second sun gear, a first ring gear linked to said second carrier, and a second ring gear meshing with said second carrier;

wherein said first rotary component is said second ring gear and is fixed by engagement of said first brake;

wherein said second rotary component is said first sun gear which receives input of rotation of said input shaft by engagement of said first clutch;

wherein said third rotary component is said second carrier and said first ring gear which receive input of rotation of said input shaft by engagement of said second clutch, and which are fixed by the engagement of said second brake; and

wherein said fourth rotary component is a first carrier linked to said output member.

59. (New) An automatic transmission according to Claim 57, wherein, in first speed forward, said first clutch and said second brake are engaged;

wherein, in second speed forward, said first clutch and said first brake are engaged;

wherein, in third speed forward, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said first clutch is engaged;

wherein, in fourth speed forward, said first clutch and said second clutch are engaged;

wherein, in fifth speed forward, reduced speed rotation is input to said first rotary

component from said reduced rotation output means, and said second clutch is engaged;

wherein, in sixth speed forward, said second clutch and said first brake are engaged;

wherein, in first speed reverse, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said second brake is engaged; and

wherein said automatic transmission provides six forward speeds and one reverse speed.

60. (New) An automatic transmission according to Claim 58, wherein, in first speed forward, said first clutch and said second brake are engaged;

wherein, in second speed forward, said first clutch and said first brake are engaged;

wherein, in third speed forward, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said first clutch is engaged;

wherein, in fourth speed forward, said first clutch and said second clutch are engaged;

wherein, in fifth speed forward, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said second clutch is engaged;

wherein, in sixth speed forward, said second clutch and said first brake are

engaged;

wherein, in first speed reverse, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said second brake is engaged; and

wherein said automatic transmission provides six forward speeds and one reverse speed.

61. (New) An automatic transmission according to Claim 37 providing six forward speeds and one reverse speed, and wherein in fifth forward speed said first clutch and said second clutch are engaged.

62. (New) An automatic transmission according to Claim 61, wherein said first planetary gear unit is a multiple type planetary gear unit comprising a first sun gear, a long pinion which meshes with said first sun gear, a short pinion which meshes with said long pinion, a carrier rotatably supporting said long pinion and said short pinion, a second sun gear meshing with said short pinion, and a ring gear meshing with said long pinion;

wherein said first rotary component is said second sun gear and is capable of receiving input of the reduced speed rotation of said reduced speed rotation output means;

wherein said second rotary component is said carrier which receives input of rotation of said input shaft by engagement of said first clutch, and which is fixed by

engagement of said first brake;

wherein said third rotary component is said first sun gear which receives input of rotation of said input shaft by engagement of said second clutch, and which is fixed by engagement of said second brake; and

wherein said fourth rotary component is said ring gear linked to said output member.

63. (New) An automatic transmission according to Claim 62, wherein:

in first speed forward, reduced speed rotation is input to said first rotary component from said reduced speed rotation output means, and said first brake is engaged;

in second speed forward, reduced speed rotation is input to said first rotary component from said reduced rotation output means, and said second brake is engaged;

in third speed forward, reduced speed rotation is input to said first rotary component from said reduced speed rotation output means, and said second clutch is engaged;

in fourth speed forward, reduced speed rotation is input to said first rotary component from said reduced speed rotation output means, and said first clutch is engaged;

in fifth speed forward, said first clutch and said second clutch are engaged;

in sixth speed forward, said first clutch and said second brake are engaged; and

and wherein, in first speed reverse, said second clutch and said first brake are engaged;

whereby six forward speeds and one reverse speed are provided.

64. (New) An automatic transmission according to Claim 37 wherein said first clutch is located on the side of said first planetary gear unit axially opposite said reduced speed rotation output means.

65. (New) An automatic transmission according to Claim 37, wherein said first clutch engages at a relatively low to medium speed.

66. (New) An automatic transmission according to Claim 37, wherein said second clutch engages in reverse.

67. (New) An automatic transmission according to Claim 37, wherein said first clutch comprises first friction plates which, at their radially inward ends, are splined to a member linked to said second rotary component, a first drum member integral with a hydraulic servo, second friction plates splined to an inner surface of said first drum member and intermeshed with said first friction plates, a first piston member for pressing said intermeshed first and second friction plates, and a first hydraulic servo having a first oil pressure chamber formed by sealing between an inner cylindrical surface of said first piston member and said first drum member;

and wherein said second clutch comprises third friction plates which, at their radially inward ends, are splined to a member linked to said third rotary component, a second drum member which is integral with an oil pressure servo and which is splined to fourth friction plates intermeshed with said third friction plates, said second drum member being radially inward of a member linked to said second rotary component, a second piston member for pressing said intermeshed friction plates, and a second hydraulic servo having a second oil pressure chamber formed by sealing between an inner cylindrical surface of said second piston member and said input shaft, and between an outer cylindrical surface of said second piston and said second drum member.

68. (New) An automatic transmission according to Claim 37, wherein said output member is disposed axially between said first planetary gear unit and said reduced speed rotation output means.

69. (New) An automatic transmission according to Claim 37, wherein said output member is disposed axially between said first planetary gear unit and said second clutch.

70. (New) An automatic transmission according to Claim 37, wherein said reduced speed rotation output means is a double pinion, speed reducing, second planetary gear unit;

and wherein said first and second planetary gear units and said output member are coaxial with said input shaft.

71. (New) An automatic transmission according to Claim 37, further comprising a differential unit for outputting rotation to drive wheels, and a counter shaft unit for engaging said differential unit, wherein said output member is a counter gear meshing with said counter shaft unit.

72. (New) An automatic transmission according to claim 39 wherein said fixed element is a fixed carrier having pinions meshed with said input rotary element and said reduced speed rotary element.

73. (New) An automatic transmission according to claim 44 wherein said fixed element is a fixed carrier having pinions meshed with said input rotary element and said reduced speed rotary element.

74. (New) An automatic transmission according to claim 46 wherein said fixable element is a carrier having pinions meshed with said input rotary element and said reduced speed rotary element.

75. (New) An automatic transmission according to claim 54 wherein said fixable element is a carrier having pinions meshed with said input rotary element and said reduced speed rotary element.